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## A FORTNIGHT ON THE FARALLONES.

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A DUSKY group of naked, stony peaks on the horizon, set in a summer sea against a cloud-strewn sky, was our first view of the Farallon Islands, near noon on May 27, 1904. Charles A. Love, Oluf J. Heinemann and the writer had left San Francisco at seven o'clock in the morning on the trim little seventeen-ton gasoline schooner 'Jennie Griffin,' which makes bi-weekly trips. As we neared the islands birds became more and more numerous; bands of cormorants, strung out in Indian file, passed us, and flocks of murrelets dove or splattered over the water from the ship's side. With a retinue of cackling gulls above us or trailing in our wake, we entered, at half past one, the picturesque harbor, walled in by towering cliffs, rocky arches and jagged islets, prosaically named Fisherman's Bay. Amid the rising clouds of bird life, startled by our whistle, we dropped anchor, and after a short row ashore and a flat-car ride of half a mile, drawn by the famous island mule, 'Patti,' we arrived at Stone House, a comfortable two-story structure of spotless white, of which we were given possession. With all the eagerness that characterizes the naturalist in new territory we partook of a hasty lunch and set forth to explore the greatest of western bird rookeries.

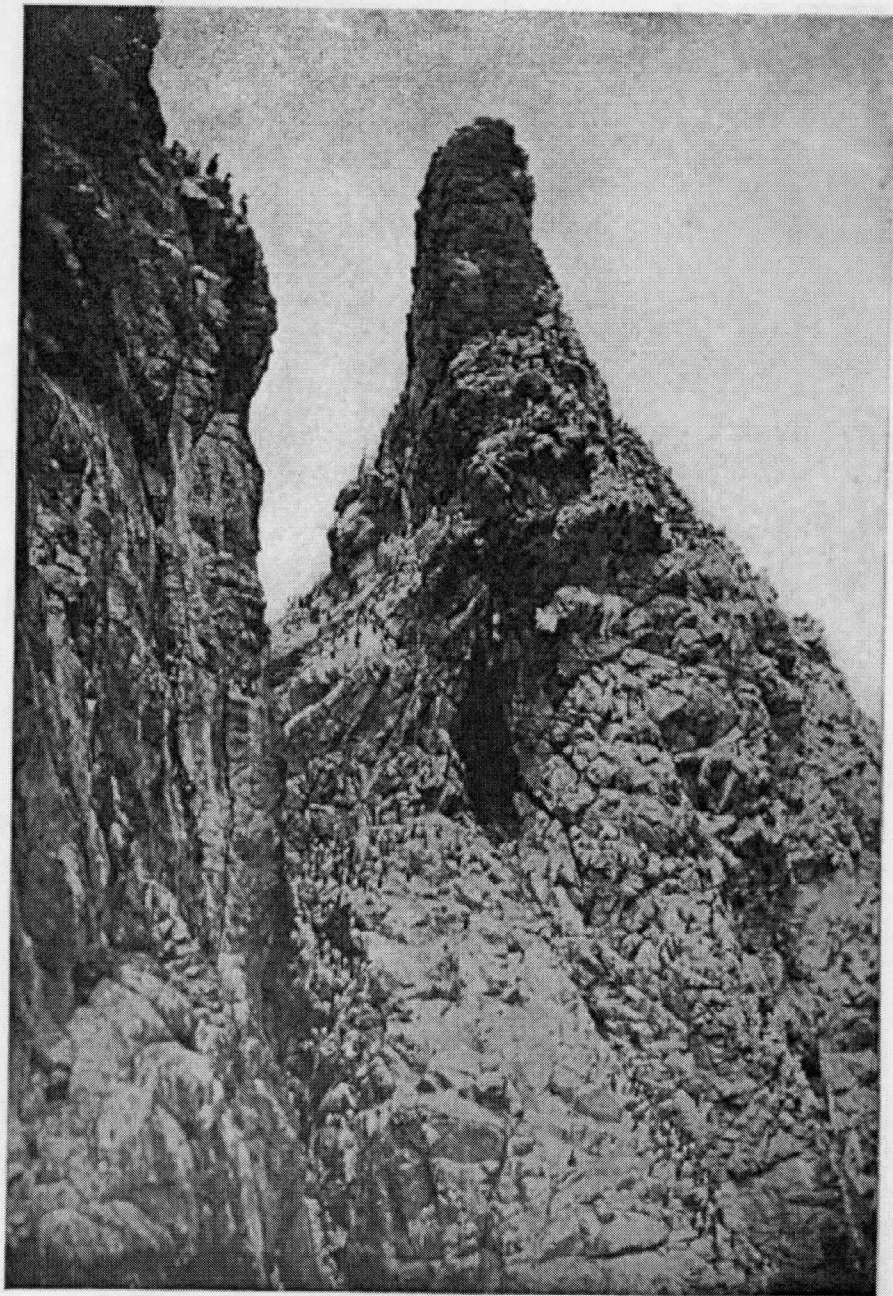
After the discovery of gold in 1849 the fast increasing commerce of the 'Bay City' necessitated the installation of a light-house on these islands, as they lie due off the harbor. The

light is of the first order and the most important on the coast, and is zealously tended by the four keepers from sunset to sunrise, in three-hour watches. The light tower is perched on the summit of the islands and is reached by a winding path that zigzags along the steep bluffs. When the heavy gales blow the keepers are often forced to crawl on hands and knees in the unsheltered places. Their homes, two two-story frame buildings, are on the level tract on the south side, and with Stone House, numerous outbuildings and the fog-station, have the appearance of a small hamlet. The wireless telegraphy station and Weather Bureau observatory, with its varied appliances for registering the atmospheric conditions, are situated on the Jordan, a third of a mile distant. Mr. E. C. Hobbs, the head official, very kindly allowed us the use of his dark room at will.

The resident population at present numbers twenty, more or less increased by visitors, and the register shows a strange assemblage of names — Greek fishermen, pilots, government inspectors, artists who have ventured out here to portray on canvas the wild beauty of these strange islands, and hosts of photographers whose views innumerable lie on the head-keeper's parlor table. Among these, in a class by themselves, were some by the late Chester Barlow, and, likewise distinctive, a number of inimitable bird-sketches by Louis A. Fuertes, who made a recent visit.

The islands lie about thirty miles west of San Francisco, and are divided into two groups. The North Farallones, or North Rocks as the islanders term them, lie seven miles to the northwest and, compared with the main group, are small and unimportant. Midway between lies lonely little 'Four Mile Rock,' also known by the misleading title of the 'Middle Farallon.' The southern cluster comprises South Farallon, the main island, Sea Lion Islet, Finger and Arch Rocks, easily reached by planks, and Saddle Rock and Sugar Loaf by boat, besides a number of minor islets. (Plates XXIII and XXIV.)

South Farallon, or Southeast Farallon as it is also called, is a mile long, from a quarter to a half a mile or more wide, and three and a half miles in circumference. A rocky backbone runs the entire length, more or less broken by gorges and by a narrow sea-stream, the 'Jordan,' which separates a portion known as West



FINGER ROCK.

End, and which has been recently spanned by a substantial bridge. The highest points are Light Tower Peak, 345 feet elevation, on the east, and Main Top, 225 feet, on the west. The slope from the ridge to the water's edge is in places so precipitous as to preclude foothold, in others running out into broad rocky or grass covered flats, with now and then a sandy beach. The tireless waves have hewn all manner of curious caves, arches, fjords and basins in the rocky shore. There are caves inland as well, one extending far under Light Tower Peak. The base rock of the islands is a dark, rather soft granite, except Sugar Loaf, which is a mass of conglomerate. The soil, in some places of considerable depth, though confined to the more level slopes, is guano mixed more or less with granite sand, which latter, with broken shells, forms the beaches.

Rain is the only potable water, and is caught in a broad cement shed and stored in cool reservoirs and tanks. A spring of amber colored mineral water bubbles up within a few feet of the breakers, which has the remarkable flavor of unsweetened lemonade. A superficial examination showed the principal mineral ingredients to be sulphates of alumina and iron.

With the exception of a grove of twenty Monterey cypress trees in a protected situation the vegetation is limited to several varieties of clinging weeds, viscid rock-flowers, moss and the hardy grass which clothes some of the flats and slopes. The surrounding islets are all precipitous with little or no plant life.

The climate is rather cool, with frequent high winds. The first seven days of our stay the weather varied from clear to cloudy, with little wind and a calm sea, in fact perfect weather. June 3 a strong northwest wind sprung up, with a maximum velocity of fifty-two miles an hour on the level and close to seventy on the peak. During the next two days we again had pleasant weather, and then on June 6 and 7 the wind blew from twenty-eight to forty-two miles an hour, but moderated more or less the last four days of our stay. We had fog but one night, June 1, when five hundredths of an inch of moisture fell, and our sleep was punctuated by the fierce blasts of the steam fog-whistle. Except on the lee side, the high winds prevented good results with the camera, but as these were only occasional we had but little difficulty in taking our six dozen pictures.

in 1904!



Mammal life is not unrepresented on these sea islands. Great bellowing herds of ponderous sea lions make their home on Saddle Rock and Sugar Loaf, and whether floundering clumsily up and down the rocky slopes or moving quietly along the shore line, these huge amphibians were a continual study. According to the residents the young sea lions have a strong aversion to water and frequently wander far inland on the main island. Rabbits, said to be of Australian breed, abound on South Farallon. They inhabit burrows on the hillsides and when surprised often scamper, in their hurried efforts to hide, into some small nook or crevice from where they can be pulled out by the hand.

The following is a list of the breeding birds observed :

1. *Lunda cirrhata*. TUFTED PUFFIN.

To see that most curious bird, the puffin, with its massive bill and the yellow curls that adorn its head, in its summer home is alone well worth the island trip. We first encountered this brownish, short-tailed species of bat-like flight on the day of our arrival, just off the harbor, and from its striking features we were able to identify it at a glance. We found them nesting abundantly over nearly the entire island, from the sea level to the crest, and at Puffin Slope, between North Landing and Tower Point, the hillside is simply honeycombed with their burrows; I have counted as many as forty-three birds sitting on the rocks about the entrances. There is also another large colony on the slope opposite Murre Rocks, on West End. The holes ran in from one to five feet, some being dug in the soil among the rocks while others were natural cavities in the cliffs and ledges or under boulders. A number were unlined, but most of them were scantily lined, and in a few the single egg was partly buried in a heap of weeds. During our visit we found both fresh and partly incubated eggs, the former predominating. The majority were but very faintly marked, and those wreathed with jerky lines of lilac and tan were rare exceptions. All eggs except those just laid were more or less discolored by contact with the damp soil and other surrounding material.

Its white face and light colored bill rendered the puffin easily

distinguishable in the semi-dark burrows. Some birds took flight on our approach, while others left the egg and crawled further back in the tunnel, offering no resistance; but the majority refused to stir and sat quiet and motionless, although that keen-edged tool, their beak, was ever active, and not until I attempted to reach an egg did I fully appreciate its formidableness. If a stick or other object is thrust within its reach it hangs on with the tenacity of a bulldog, only letting go when its mouth is pried open. On West End, one day, I beheld two puffins so vigorously battling that they were oblivious to my presence; and Mr. Cane informed me that he once saw two birds begin fighting in the air, above the light tower, and they continued to fight while descending, and even after they reached the water.

On one occasion I chased a rabbit to a burrow among the rocks, but the animal had scarcely entered when out it quickly jumped. I looked in and there, sentinel-like, stood the puffin on guard with a bill full of 'bunnie's' fur.

The statement that "they are among the most noisy of the sea birds, always screaming while out on the rocks and constantly growling while in their burrows,"<sup>1</sup> I consider erroneous as we found the puffin a very quiet bird. Although the 'sea parrot,' as this species is also called, is a good flier and can rise from the ground with ease, yet when the heavy winds were blowing I noticed scores crouching flat on the rocks. On foot this bird is about as ungainly as most of its tribe and has a ridiculous straddling gait.

## 2. *Ptychoramphus aleuticus*. CASSIN'S AUKLET.

One might visit the Farallones in the daytime and unless he investigated their nesting haunts or hiding places, would never know that either the trim, white-breasted auklet or the sooty swallow-like petrels existed on the islands. The nest of the auklet was the first nest we found, as they were common about Stone House, whence we sallied forth on our initial trip, as they were almost everywhere. The single white egg, with a faint greenish

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<sup>1</sup> Nests and Eggs of North American Birds, p. 9.

cast, is laid in burrows in the guano from one to four feet in depth, or at like distances in nooks and crannies of the rocks and cliffs, with rarely any lining, and at all elevations above the sea. The eggs, like those of the preceding species, become much soiled by their surroundings. On our arrival fresh or nearly fresh eggs were the rule and young the exception, while on our departure it was the reverse.

According to my experience this species, when robbed, does not lay again. When pulled off the nest a sticky reddish substance exudes from the bill of the parent, which is no doubt semi-digested food for the young. When released the auklet would frequently run back to the nest while others would fly rapidly out to sea. The young are covered with black down. During the latter part of our stay I found many of the larger young birds alone in the burrows, both parents being away, evidently foraging.

When the islands are wrapped in the darkness of night, the lofty pinnacles of the ridge rise like towers above a battlement, and from their highest point the strong light from the light tower streams across the sky and far out to sea. And now, when all the other birds have retired to roost and the great rookeries are silent, in from the sea and out from their burrows the auklets come by thousands, and with the petrels begin their nightly labor. By the light of a lantern the air and ground seem black with swift moving figures, and their strange yet not unmusical cries mingle into a mighty chorus which, coming out from the darkness, has a weird effect.

### 3. *Cephus columba*. PIGEON GUILLEMOT.

The guillemot is a trim little bird, resembling a pigeon in size, form and plumage, but it lacks the latter's grace on land, moving over the rocks in a clumsy, flat-footed fashion. These birds became more abundant every day during our stay, but they did not begin to lay until the end of the first week in June. We found well incubated single eggs as well as pairs; hence incubation must really have begun although the majority of all the eggs we found were fresh. The nests, merely pebble-lined slight hollows, were located under projecting ledges, boulders, or in spaces

between piles of rocks where they could be seen not infrequently from above. I also noticed a number of pairs nesting under the wooden platform that overhangs the rocks at North Landing. It is usually several days after laying the first egg before the bird lays the second.

Although more wary than most other island species, on several occasions we caught sitting birds on the nest. In fact, firearms are seldom necessary to secure specimens on the Farallones, and then only a rifle should be used, for, according to the head light-keeper, Mr. Cane, nothing frightens the birds on the island like the report of a shotgun, and when it is discharged in a rookery creates a panic. The cry of the guillemot is a peculiar feeble hiss-like whistle, almost inaudible amid the roar of the mighty breakers that come tearing up against the flat, low-lying shore rocks where these birds congregate in numbers.

#### 4. *Uria troile californica*. CALIFORNIA MURRE.

The murre not only outnumbers all other species on the islands, but all of them combined. On May 28 we found what the head keeper said was the first egg of the season, and he also stated that the birds commenced laying about ten days later than usual this year. Later on eggs became more and more numerous, and during the last week of our stay we noted them everywhere.

The largest rookeries on the main island are in Great Murre Cave and at Tower Point, on East End, on the rocky shelves and terraces below Main Top Peak, and on the dizzy sides, from sea to summit, of the Great Arch, the natural bridge par excellence, on West End. The birds also breed abundantly all along the ridge and in the numberless grottoes along the seashore, while the surrounding islets are covered with them in countless thousands. Great Murre Cave, which runs in from the ocean on Shubrick Point, with its vast bird population, is a wonder to behold. All ledges and projections, as well as the cave floor, were murre-covered, and on our approach the great colony became a scene of animation, with a vast nodding of dusky heads and a ringing concert of gurgling cries. The birds, at first in tens and then in twenties, flew out, or by sprawling and flapping over the rocks and

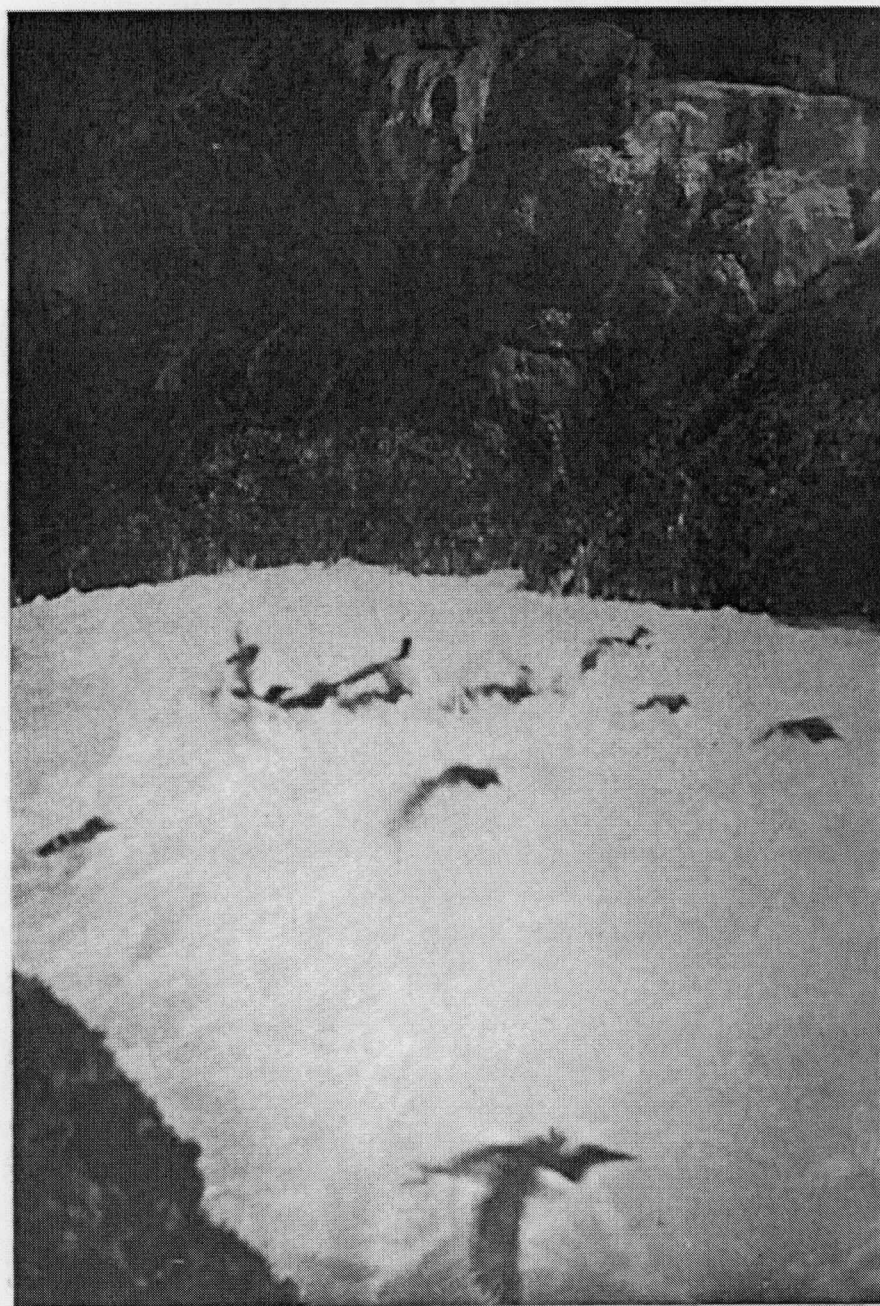


into the foaming surf, thus gained the open sea (see Plate XXV). Some were terribly thrown about in the breakers but apparently received little injury. On our entrance the main body took flight, with a mighty roar of wings, and so close did they fill the cave that it behooved us to get behind boulders to prevent being struck by them. Many birds still remained in the cave, retreating deep into the branching recesses or, sheep-like, huddled into the corners, where they could be picked up by the hand. The multitudes which took wing would wait, scattered over the water about a quarter of a mile from shore, until the commotion was over and would then come trooping back to the cave.

The murre when caught is by no means a peaceable captive, as anyone who has come in range of its strong, sharp-pointed bill will testify. The closeness of the tiny feathers on the head and neck have the appearance of, and feel to the touch like, a piece of satin. It is a most ungainly bird on land; if put to flight when on some abrupt eminence they can usually gain sufficient momentum to continue; otherwise they scramble, with the aid of their wings, clumsily over the land and boulders, and in their endeavor to hurry frequently strike with force against the rocks.

From my own observations I do not think that in a battle royal the gull with its hooked bill has any advantage over the murre with its stiletto-like weapon, but succeeds in its high-handed robbery by better control of wing and foot and overwhelming numbers. The gulls swoop down when the murres have been flushed from their eggs and secure the booty, or a number by harassing a single bird simultaneously from all sides finally start the egg rolling. It is amusing to see a bob-tailed, erect, soldier-like murre with an egg between its legs and a single swaggering gull endeavoring to secure it. Every time the gull cranes its neck forward for the egg the murre also bends with a vicious snap of its bill, which the gull is wise to dodge; and thus the birds will keep salaaming, like two polite Japanese, until another gull comes to aid its fellow or, unaided, the bird gives up the attempt. The cave colonies are the only ones where the murres are secure from persecution by these bird-pirates.

The murre's egg is admirably adapted for the situations in which it is laid, as its pear-shaped form prevents its rolling except



GREAT MURRE CAVE.

in a circle, and the extremely hard shell permits of much rough usage. We found eggs almost everywhere — in inland caves, along the rocky ridges, in damp sea grottoes and on low-lying shore rocks — with no sign of a nest, and in places where one would marvel at their perilous position. On the islands where an unlimited series can be seen, with an endless variation in colors and markings, some very grotesque looking specimens can be found, and on some the strange scrawls have a remarkably close resemblance to figures and other designs. The two most easily separable types, those of white and greenish ground color, seem about equal in abundance. Cinnamon colored eggs were rather scarce, and those of pure spotless white were but very rarely seen.

Mr. Cane states that the birds depart in September, leaving with the young at night, returning to the islands in December.

Although the day of professional egging has passed, the islands still ring with accounts of the egg-carrying feats and hair-raising exploits in which, latterly, the light-house crew took the principal part, and which netted them a neat income. An egger's outfit consisted of a blouse-like 'egg shirt,' which, drawn tightly around the waist, held the eggs, often as many as eighteen dozen or more; a pair of 'egging shoes' with soles made of braided rope and tops of canvas, which are still used by the islanders for climbing steep rocks; and lastly a long coil of stout rope for use in the more dangerous places. Two lives have been lost in this risky trade and minor accidents were common. One egger fell off Saddle Rock with a shirt full of eggs and would have sunk with the weight had he not had the presence of mind to begin breaking them on striking the water. When the season started the main and adjacent islands, including Sugar Loaf and Saddle Rock, were gone over and all the murre's eggs in reach destroyed, thus insuring only fresh ones. This and the regular egging days, when the great colonies were flushed, were red-letter days for the rapacious gulls who followed the eggers about in noisy flocks. Mr. Cane stated that on mornings when a late start was made the gulls would become impatient and start a reign of terror in the murre rookeries by themselves. The available territory was divided into two sections, each being worked every other day. There still remain on the island stone sheds where the eggs were stored,

secure from the pillaging gulls, and from which they were shoveled out into the hold of small schooners or fishing boats without packing. Although the great Farallon supply is now cut off, the eggs still find their way, in limited quantities, to the city markets from the rookery at Point Pedro, in the adjacent county of San Mateo.

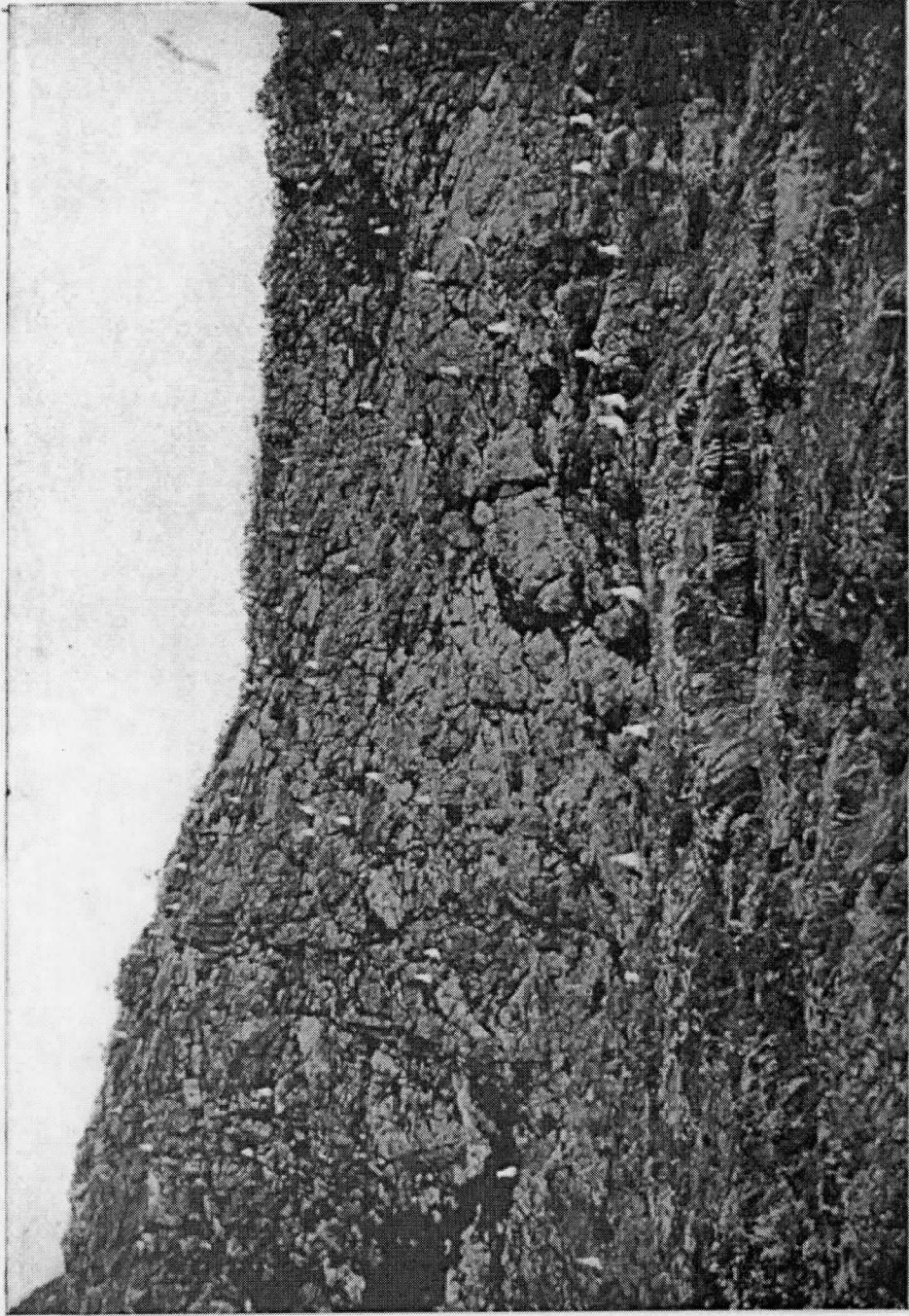
### 5. *Larus occidentalis*. WESTERN GULL.

The gulls are the virtual rulers of bird-dom on the Farallones, and that they live on the best the islands afford those suffering subjects, the murre, cormorants and rabbits, will testify. I felt but little compunction when taking their eggs, for it seemed but just retribution. When a nest was disturbed in the main breeding grounds the parents would set up a loud cry in which the surrounding flocks would join until it became almost universal and continuous. Some of the more pugnacious birds would dart down at our heads, swerving upward at the last moment.

While this bird builds in colonies, so to speak, they are not like those of the cormorant or murre. There is always fighting room between the nests and only the aggregations near Shell Beach, Indian Head, and at Guano Slope on West End, and about Tower Point on East End, could well deserve this term. Besides these places we found them breeding in scattered congregations all along the rocky terrace west of the Jordan, from the shore to the highest points. On the east, in addition to the rookery at Tower Point, we observed a dozen isolated nests at Bull Head Point, near Arch Rock, and about half that number right at the Weather Bureau observatory, where, rewarded for their confidence in man, they brooded unmolested. The great mass of driftwood, thrown up by winter storms, was a favorite spot in the Shell Beach Rookery. We did not, however, observe any of these birds nesting off the main island. (Plate XXVI.)

While they are somewhat wary, many allowed us to come quite close before rising from their nests. The latter are placed in natural basin-like hollows among the rocks, by which they are partially sheltered, although some were in the most open and windy situations. The nest is a bulky structure, composed of various dry





GULLS ON WEST END.

island weeds and grasses, and has about as much claim to ingenuity as those of most sea birds. They vary little in size, averaging thirteen inches across, the cavity being eight inches by four deep. About many of them I noticed small heaps of ejected fish bones. When we arrived nearly all the nests held fresh eggs, and on our departure many young were pipping the shell and several had emerged. We found the eggs, when boiled, to be indistinguishable in flavor from those of the chicken, and they usually formed some part of the daily fare during our two weeks' stay. There being four keepers with their families on the island, the gull colonies have been divided into four routes, visited every other day. These routes are all on the flats or gradual slopes, those on the rugged ridges being left undisturbed. Only single eggs are taken, nests containing more being left, and the average yield of a route is seventy-five eggs. After being repeatedly robbed the birds continue laying until finally they become content to hatch a pair or a single egg, although three is the full set, and in this way the laying season gradually comes to a close, which it was nearing when we left, as we found numerous singles in which incubation was far advanced.

But even when the gulls begin to set their troubles are not over, for, later, many of the 'squabs,' which have the fatality to taste like chicken, find their way into various fricassees and potpies to grace the table of the Farallonians. According to the keepers but few gull eggs ever reached the city markets in the old 'egg-times,' and personally I do not remember ever seeing them on sale. The shells, compared with those of the murre, are frail and would not stand shipment 'murre style.'

Mr. Cane found a white and almost unspotted gull's egg the first week in June, and Charles Love of our party collected on June 11 a pair, of which one is light pearl and the other greenish clay, and both are but faintly marked. Runts of various sizes were not uncommon. We found the markings to vary from fine scrawls or small spots to great blotches, some of which covered half the side of the egg. Specimens with light and dark ground colors were frequently found in the same set, as well as those with the different styles of markings. Although the gulls seldom eat the eggs of their own kind, on several occasions I noticed them

doing it, especially when the egg had been knocked out of the nest.

Only three or four gulls in immature mottled dress were seen, and when the great flocks on West End would rise and hover above us in their uniform snowy plumage, in the bright sunlight, it was an inspiring sight.

6. *Oceanodroma leucorhoa*. LEACH'S PETREL.

Although found some years ago on the island by Mr. Leverett M. Loomis, and doubtless breeding there in limited numbers, we failed to find them, although we might have, perhaps, had we come a month later.

7. *Oceanodroma homochroa*. ASHY PETREL.

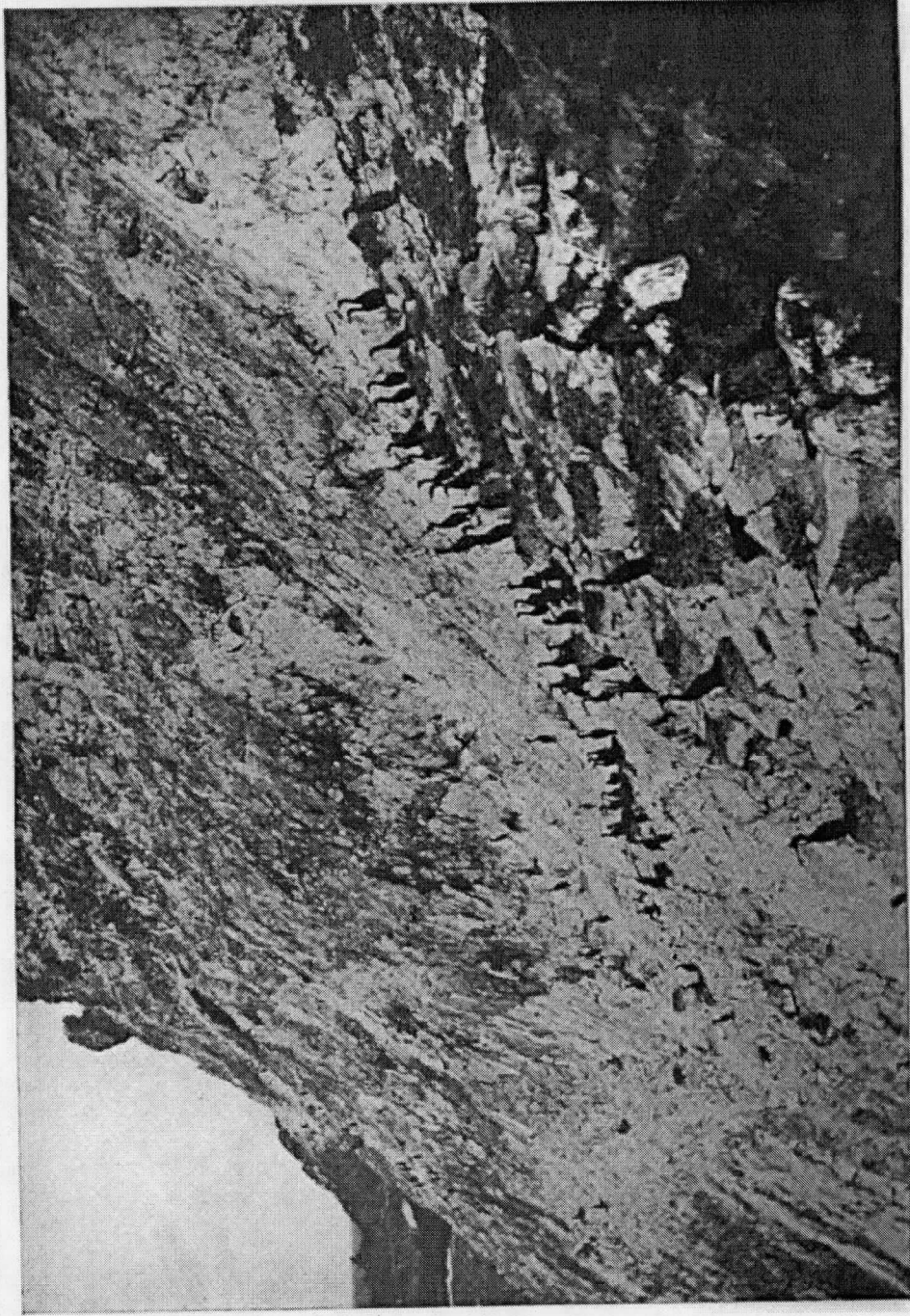
We saw little of the petrels except at night, when they fluttered about, or on our daily rambles when we spied their dark form in some narrow crevice in the ledges or rock fences. On being lifted in the hand a dark oily fluid would drip from their beaks, and when released these birds, with the form and wavy flight of a swallow, would make for the open sea. We noticed a number of these dainty little birds which had been killed by striking the telephone and telegraph wires on the island.

The petrels were evidently late in breeding this year, for although we made a thorough search and found many roosting birds, we secured no eggs except those of last year, in which the contents had dried.

8. *Phalacrocorax dilophus albociliatus*. FARALLON  
CORMORANT.

We first visited the Main Top Rookery, the only one of this species on the Farallones, on the morning of May 29. After a hard climb, about the hardest on the islands, with all our photographic apparatus, we saw the rookery just above us, below the peak. As we came up a strange and never-to-be-forgotten sight greeted our eyes. All about on the weed nests on the jutting rocks





A PORTION OF THE BRANDT'S CORMORANT ROOKERY.



and boulders sat the angered cormorants with open bills, pulsating throats and ruffled feathers, shaking their snake-like necks back and forth and uttering hoarse guttural, wheezy croaks, and only leaving the nests when we were within arm's reach of it. The parents were easily identified by the bright yellow gular sac, and the young, which most of the nests contained, were inky-skinned creatures, with little in their favor, wobbling helplessly about the nests and barking like little puppies. On our last visit most of them were covered with sooty down and looked more presentable. The eggs, three or four in number, were nearly all well advanced in incubation, although we got several fresh sets; they had the appearance of being finely spotted, on account of the numerous fly specks.

The weed nests (Plate XXVII, Fig. 2) were like those of the gull but much larger and shallower, measuring twenty inches across, the cavity being nine in width and three in depth. I counted but forty-seven nests in the colony, which shows that the number of these birds, now the least abundant cormorant on the islands, is continually decreasing. On subsequent visits we noticed the birds did not re-lay in the nests from which we had taken eggs. The gulls did not molest the eggs and young in this rookery, for the reason the old birds did not give them a chance, they settling back on the nest as soon as we passed it. While it was interesting to watch these avian snakes in their summer home, the decaying remains of numerous fish about the colony and the swarms of seal-flies rendered it a pleasant place to be away from.

#### 9. *Phalacrocorax penicillatus*. BRANDT'S CORMORANT.

Brandt's Cormorant is the commonest and biggest species of the island cormorants. Besides the large rookery on the more gradual slopes on the north side below Main Top Ridge, extending from near the water to well up the hillside, there are large colonies nesting on Saddle Rock and Sugar Loaf. We gained our first view of the rookery on West End when we crossed the ridge on the morning of May 30. Right below us, with scarcely foot-space between the nests, was the great city of cormorants. (Plate XXVII.) I counted 156 nests; on June 3 they had increased to 187, and they were still building. The weeds that trail over the

rocks form most of the nest material, and these become more or less dry by the end of May and are easily detached by the birds; in fact a strong wind will frequently rip up a whole mat-like bed. In make and size the nests of this species are like those of the preceding. I noticed considerable sea moss among the nest material, which is undoubtedly uprooted by the birds themselves, but it was not in such variety as I had been led to believe. Quarrels over nest material were of frequent occurrence among the birds of the rookery, but the most arrant robbers came from the settlement on Sugar Loaf, where the weeds do not grow. It was a queer sight to see one of these great lumbering-flighted cormorants come flapping into the colony, and after some opposition succeed and go awkwardly sailing off with a long stringing bunch of weeds.

After our first inspection we did not approach close to the rookery for the reason that the birds were just laying and were easily put to flight, upon which hordes of screaming gulls would settle down and make off with the eggs, some breaking one after another through pure meanness without touching the contents, while others would devour the egg (less the shell) in the nest without taking the trouble to fly, and by the time the cormorants returned not an egg remained. From the nests on the outskirts we took several sets of four eggs. This species, like the other two varieties, is easily recognized, even at a distance, from its nuptial plumage, the most conspicuous adornments being a dark blue gular sac and small bunches of thread-like feathers hanging from the sides of the neck.

All day long the great rookery was a scene of activity; everywhere the ponderous clumsy birds, using to the best of their ability what skill nature had endowed them with, were fashioning their weed-homes, while scores of setting birds ever and anon would rise to stretch their stiffened wings or to greet their mates returning fish-laden from the sea.

10. *Phalacrocorax pelagicus resplendens*. BAIRD'S  
CORMORANT.

Baird's Cormorant, by its small size, sleek plumage, and conspicuous white flanks, was easily separated from the other mem-

bers of the family on the isles. These birds are remarkably adept in clinging to the almost perpendicular cliffs, where on some slight projection or hollow they will place their weed nest, some portion of which frequently extends over the edge. Most were in situations that to think of reaching would take one's breath away, and always brought to mind the use of long dangling ropes or gigantic ladders to bring these unwilling specimens to the cabinet. We were, however, able to reach a number of those in the more accessible places. Although a more or less solitary species we found quite a colony, with about twenty nests, along the precipitous rocky divide on the south side of West End. In many places on the main island and adjoining islets groups of several nests together were common, but a large number of them were isolated. The nests were built in the usual cormorant style, a little smaller and deeper than those of the other two species. The day we came the birds were guarding their homes, evidently fearing usurpation by their own kind, for in all that we could see no eggs had yet been laid, and up to the time we left they were still on duty on the eggless nests. Many of the latter were completed, while others were being built, either over the remains of a last year's structure or anew. When constructing a nest one bird would bring the weeds while its sitting mate would place them, although at times both birds would take a hand in the work, which seemed to progress with marvelous slowness.

11. *Lophortyx californicus californicus*. CALIFORNIA  
PARTRIDGE.

According to Mr. Cyrus J. Cane, the present head keeper, several of these birds were on the island for a period of seven years and built their nests among the grass on the flats. One in particular struck up a great friendship with one of the hens and would roost by its side in the chicken house.

12. *Corvus corax sinuatus*. AMERICAN RAVEN.

For many years a pair of these birds nested in a trough-like aperture in Raven Cliff, but since these were shot last year, on

account of their depredations on the island hennerly, no birds of this species, according to the lighthouse crew, have been seen.

13. *Carpodacus mexicanus frontalis*. HOUSE FINCH.

It was a surprise to us on arising the second day, to hear the loud cheerful whistle of the House Finch perched on the peaked roof of our dwelling, for somehow during the excitement of our first day among the great bird shows we had overlooked the presence of this species, several pairs of which, for the first time, were nesting here and challenging the Rock Wren's long-defended title of being the island's only song bird. Were it not for the grove of friendly evergreens, where these birds would have nested is a puzzle. One nest, which held five eggs in May, was closely made of island grass, with an occasional feather intermixed, and lined with bits of string, cotton and mule hair. We noted another nest with a like complement just before we left.

14. *Salpinctes obsoletus*. ROCK WREN.

The fluffy little Rock Wren, whether rummaging among the boulders or delivering its cheery song from its granite perch, was a constant companion on our daily travels, except west of the Jordan where I noted it as scarce. Had it not been for the telltale shells and stones which lined the pathways to the nests they would have been difficult to find, for the birds usually slip off unseen and make a great fuss at a safe distance to mislead the searcher. Whether the nest was in a niche in the cliffs, beneath a rock fence, or under a granite ledge cropping out above the surface, it was always placed among rocks firmly embedded and never amid the loose rocks that lay scattered about on the top of the ground. We found in all, including those of the year which had been deserted, and those of the previous season, about twenty nests.

On the 3d of June I excavated with a pick a winding cavity that ran to a nest below a solid granite ledge near the Weather Bureau station and which the children had been unable to reach. In nests of this sort considerable care must be taken, as flying bits of stone or falling debris are liable to destroy the eggs.



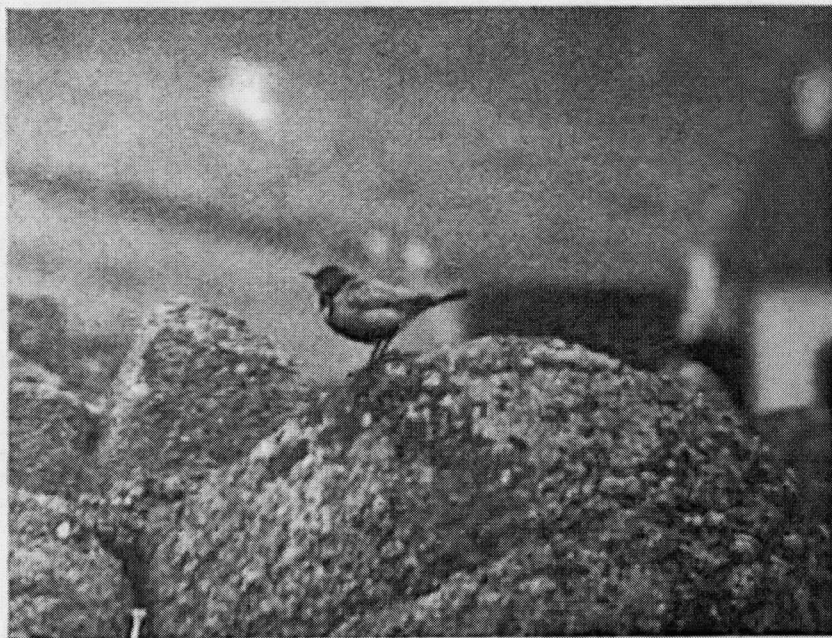


FIG. 1. ROCK WREN.

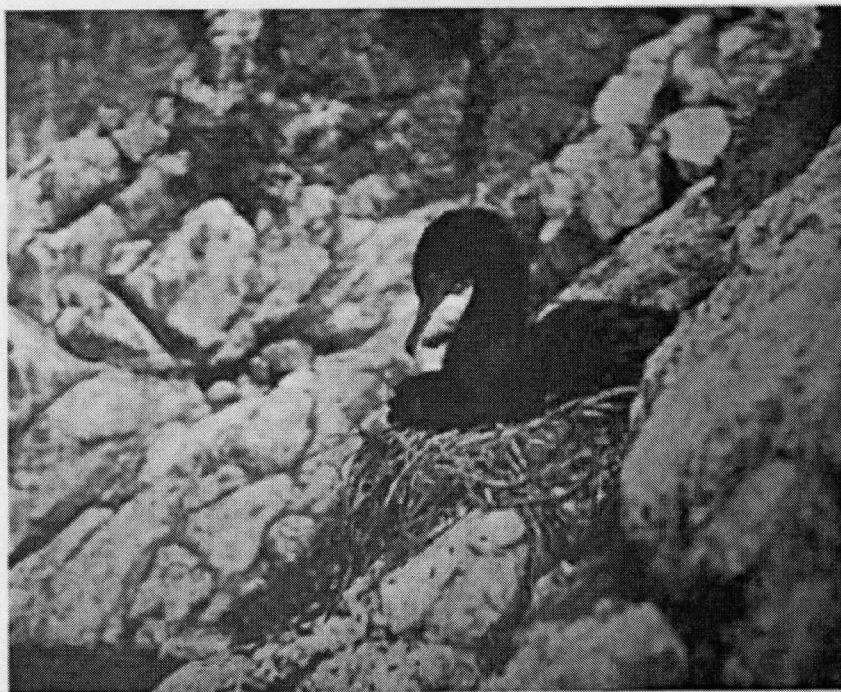


FIG. 2. FARALLON CORMORANT.

This nest held seven eggs in which incubation had made a slight start. It was made of excelsior packing and lined with thread-like grass and mule hair with small bits of cotton about the brim, and had the usual accumulation of stones and shells leading to it. Mr. Love found a nest the same day under a stone wall near Stone House, with a like complement. Most of the birds, however, had young in or out of the nest, and Ernest Wenthars, a promising young bird student, says they start nest-building early in March, for he has noticed eggs in the latter part, and must raise two if not three broods in a season. As many of the nests, however, are robbed by urchins the breeding season is unnaturally extended, for the birds will not lay in a fresh nest which has been disturbed nor re-lay in one from which the eggs have been taken, but will rebuild in a new situation. On the 10th of June I found two of these late nests in the course of construction. We also found the percentage of infertile eggs to be heavy, for in every nest with young we noted one or two addled eggs. The wrens were very tame and when we were tunneling the home of some auklet they would be at our elbow peering among the upturned rocks for some tasty morsel, and one morning one of these birds entered our kitchen; we caught it, and after we had photographed it we set it at liberty. (Plate XXVIII, Fig. 1.)

Perhaps of all its nesting localities the favorite was under the rock foundation of the railway which flourishes under the presumptuous title of the 'Farallon Midland.' In fact, in their enthusiastic endeavor to unearth Salpinctian dwellings, some recent ornithological visitors threatened to seriously undermine the roadbed until stopped by head-keeper Cane.

By far the most elaborate nest I found was in the rear of Stone House; it ran in the earth among the rocks of a rock fence. A shelf-like stone at the entrance formed a sort of veranda, and this the birds had literally covered, as well as the main corridor leading to the nest. I noticed the pavement was equally deep under the nest, and that all the tiny nooks and crevices on the way were filled. I carefully counted all the stones and other material in this earthen burrow between the bare granite boulders, and as it was situated two feet up in the wall the birds had undoubtedly brought all of them. The strange assortment of

son of Keper

June 10

Rock Wren

articles would do credit to some fabled jackdaw, and consists as follows:

Safety pins . . . . .	1	Pieces of plaster (from walls of	
Pieces of wire . . . . .	2	house) . . . . .	4
" " a pair of scissors . . . . .	2	Pieces of shingles (some as	
" " zinc (from old bat-		large as 2 in. x 3 in.) . . . . .	12
teries) . . . . .	16	Bits of abalone shells . . . . .	9
Fish hooks . . . . .	2	" " mussel " . . . . .	20
Pieces of glass . . . . .	2	Rusty nails . . . . .	106
" " leather . . . . .	1	Bits of flat rusty iron . . . . .	227
Copper tacks . . . . .	4	Small granite stones (very reg-	
Pieces of limestone like that in		ular in size) . . . . .	492
caves . . . . .	2	Bones (rabbit, fish and bird) . . . . .	769

Also considerable dislocated nesting material, as weed stems, grass, etc.

The birds in this case had easy access to all the little bits of material that accumulate around dwellings; but even then, what a vast amount of patience and labor, as well as perception, it required to find and transport the 1665 listed objects, to say nothing of building the nest itself! This was composed of the bird's favorite substance, excelsior packing, together with a few weeds and grasses and bits of cotton and rabbit fur tucked in decoratively here and there, and measured  $5\frac{1}{2}$  inches over all, while the cavity was 3 inches across by  $1\frac{1}{2}$  inches deep.

Of all the nests we noted, in no case did we see one where the birds did not, to a greater or less degree, exercise their strange habit of paving the pathway. While various theories have been advanced to account for it, one cause, which seems to me to more nearly hit the mark is the desire to overcome dampness. Those nests with earthen floors, of varying moistness, have much more pretentious stone walks than cliff-nests which are comparatively dry, although it is true that about the latter there is generally but little space for the wrens to cover. But perhaps the best argument in support of this theory is that the birds before building the nest first line the passage, as I found that stones were equally deep below completed nests, and I also noticed that nests in the first stages of construction had the stone-ways already finished.

*Rock Wren  
nest*